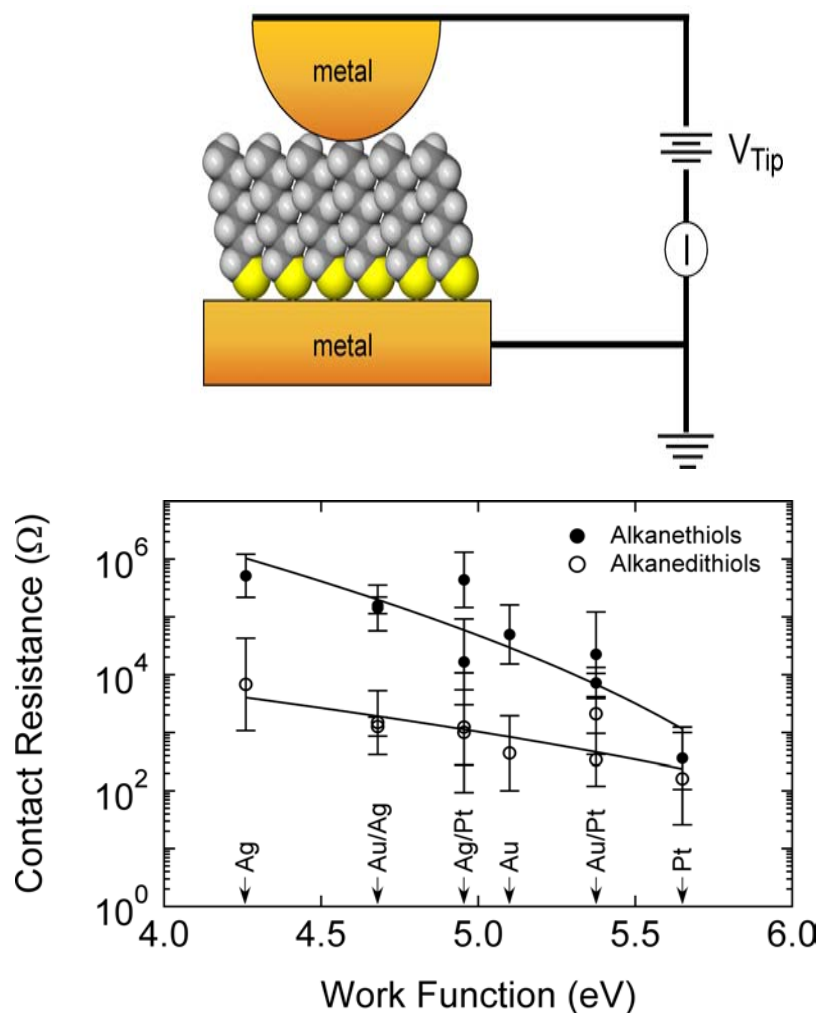


# Probing Contact Effects in Molecular Junctions

C. Daniel Frisbie, University of Minnesota, DMR-0084404

“Molecular junctions” consist of a layer of molecules sandwiched between electrodes. These structures are of interest for molecular electronics, a field that seeks to exploit the electrical properties of molecules for high density memory and other applications.

The Frisbie group has been making and characterizing molecular junctions via conducting probe atomic force microscopy (CP-AFM). Recently, the PI's students have made the first contact resistance measurements in these junctions. The contact resistance depends strongly on the metal work function and the number of metal-thiolate bonds (1 vs 2).



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## Education:

Two graduate students (Vince Engelkes, Jeremy Beebe) contributed to this work. Jeremy is a PhD candidate in chemistry. Vince is a PhD candidate in materials science. Vince also received a fellowship from the Graduate School at UMN in recognition of his exceptional record thus far in the PhD program.

## Outreach:

The PI again organized an annual materials science open house in the Department of Chemical Engineering and Materials Science.

Approximately 25 undergraduate from nearby 4-year colleges attended.



Graduate students demonstrating transistor probe station at the Materials Science Open House, 11/2002.